

ASSINGNMENT- 1

CCA 101 fundamental of it & programming

Q1: WHAT ARE THE FOUR FUNDAMENTAL PARTS OF COMPUTER?

EXPLAIN IT WITH THE HELP OF DIAGRAM.

ANS: Four fundamental parts of computer are as follows:-

(1) **CPU** : Computer scientists typically call the CPU the "brain" of the computer because this is where programs are executed. A program is a set of instructions that tells the computer how to accomplish a specific task, such as sending a file to the printer, opening a browser window, or playing music or video.

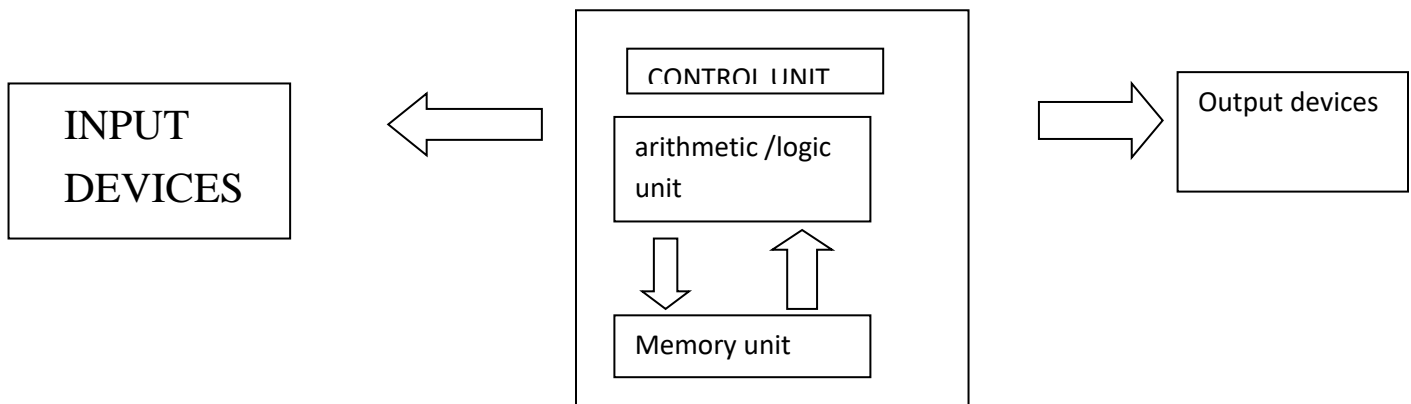
The CPU is further broken up into three smaller components: the arithmetic unit handles all the simple mathematical computations; the control units interpret the instructions in a computer program; and the instruction decoding unit converts computer programming instructions into machine code. Machine code is the basic language understood by all the components in a computer.

(2) **MEMORY UNIT** : Once the CPU converts a specific set of computer program instructions into machine code, it stores that machine code in primary storage or memory. The machine code will be treated as

either data or instructions. The CPU fetches data and instructions from memory, uses an instruction to manipulate the data, and then sends the result and the next set of instructions back to memory.

(3) INPUT DEVICES :Input units are all the devices you use to feed information to the computer, such as a keyboard, a hard drive or a networking card. These devices, in essence, bring data from the "outside world" into your computer, in much the same way that your eyes and ears bring information to your brain. Each input device has its own hardware controller that connects to the CPU and primary memory, and it has a set of instructions that tells the CPU how to use it.

(4) OUTPUT DEVICES :Output units are the devices your computer uses to relay information to the user, such as a printer, monitors and speakers. For example, everything you see on your computer monitor starts as machine code in memory. The CPU takes that machine code and converts it into a format required by your monitor's hardware. Your monitor's hardware then converts that information into different light intensities so that you see words or pictures



Q2: discuss about the classification of computer based on size and capacity?

Answer -Based on size and capability, computers are broadly classified into

(1) **MICRO COMPUTER** : A microcomputer is the smallest general purpose processing system. The older pc started 8 bit processor with speed of 3.7MB and current pc 64 bit processor with speed of 4.66 GB.

Microcomputer can be classified into 2 types

(a). Desktops (b). Portables

(2) **MAINFRAME COMPUTERS:** - Computers with large storage capacities and very high speed of processing (compared to mini- or microcomputers) are known as mainframe computers. They support a large number of terminals for simultaneous use by a number of users like ATM transactions. They are also used as central host computers in distributed data processing system.

• Examples: - *IBM 370, S/390.*

(3) **SUPER COMPUTER:** - Supercomputers have extremely large storage capacity and computing speeds which are many times faster than other computers. A supercomputer is measured in terms of tens of millions Instructions per second (mips), an operation is made up of numerous instructions. The supercomputer is mainly used for large

scale numerical problems in scientific and engineering disciplines such as Weather analysis.

Examples: - **IBM Deep Blue**

- (4) **MINI COMPUTER** :- these are much smaller than mainframe computer are also less expensive . sometime referred to as midrange server or midrange computer . they are typically larger , more powerful or more expensive than desktop computer .

Q3: what is the meaning of computer generation? How many computer generations are defined? What technologies were / are used?

Answer : Following is a brief summary of the generations of computers based on their hardware and software architecture..

s.no.	Generation & description
1	First generation The period of first generation :1946-1959. Vacuum tube based
2	Second generation The period of second generation :1959-1965. Transistor based .
3	Third generation The period of third generation :1965-1971.
4	Fourth generation The period of fourth generation : 1971-1980.
5	Fifth generation The period of fifth generation : 1980- on words ULSI

Q4. Differentiate between volatile & non-volatile memories.

➤ **What is Volatile Memory?**

Volatile Memory is the kind of computer memory that stores data temporarily. It is also referred as temporary memory. The data in the volatile memory is stored only until the power is supplied to the system, once the system is turned off the data present inside the volatile memory is deleted automatically. RAM and cache of the computer system are the best common example of the volatile memory. Volatile memory due to its temporary nature it stores only the frequently used data. The data of the programs running on the processor is stored in volatile memory. It is quite fast and efficient in nature and can be accessed rapidly. Volatile memory is directly linked to the performance of the computer system. The more amount of volatile memory the more effective performance the computer system will possess. Common examples of the volatile memory include RAM, Cache, etc.

➤ **What is Non-volatile Memory?**

Non-volatile Memory is the kind of computer memory that stores the data permanently. The data stored in the non-volatile memory remains there even after the system is turned off. ROM of the computer is the non-volatile memory. It is not that much efficient and fast in nature as compare to volatile memory but stores data for the longer period. Non-volatile memory possesses the basic system information inside it such as the boot process information, system starting up information and BIOS. Non-volatile memory is slow regarding accessing. All such data that needs to be stored permanently or for a longer period is stored in non-volatile memory. Non-volatile memory has a direct impact on the system's storage capability. The more non-volatile memory, the more permanent storage space will be there. Common examples of non-volatile memory include a hard drive, optical discs, flash memory, etc.

Volatile Memory vs. Non-Volatile Memory

- Volatile Memory is the temporary memory of the computer system.
- Non-volatile Memory is the permanent memory of the computer system.
- Data of programs in the process and frequently used data is stored in volatile memory.
- System's information, BIOS and all the other kind of data is stored in non-volatile memory.
- Volatile memory is fast and efficient in nature.
- Non-volatile memory is slow and permanent in nature.

Q5: Distinguish among system software, application software and open source software on the basis of their features.

Answer : Difference between system software and application software source software

Sr. No.	Key	System Software.	Application Software.
1	Definition	System Software is the type of software which is the interface between application software and system.	On other hand Application Software is the type of software which runs as per user request. It runs on the platform which is provide by system software.
2	Development Language	In general System software are developed in low level language which is more compatible with the system hardware in order to interact with.	While in case of Application software high level language is used for their development as they are developed as some specific purpose software.

Sr. No.	Key	System Software.	Application Software.
3	Usage	System software is used for operating computer hardware.	On other hand Application software is used by user to perform specific task.
4	Installation	System software are installed on the computer when operating system is installed.	On other hand Application software are installed according to user's requirements.
5	User interaction	As mentioned in above points system software are specific to system hardware so less or no user interaction available in case of system software.	On other hand in application software user can interacts with it as user interface is available in this case.
6	Dependency	System software can run independently. It provides platform for running application software.	On other hand in application software can't run independently. They can't run without the presence of system software..
7	Examples	Some examples of system software's are compiler, assembler, debugger, driver, etc.	On other hand some examples of application software's are word processor, web browser, media player, etc.

Open Sources

What is open source software?

Open source software is software with source code that anyone can inspect, modify, and enhance.

"Source code" is the part of software that most computer users don't ever see; it's the code computer programmers can manipulate to change how a piece of software—a "program" or "application"—works. Programmers who have access to a computer program's source code can improve that program by adding features to it or fixing parts that don't always work correctly.

What's the difference between open source software and other types of software?

Some software has source code that only the person, team, or organization that created it—and maintains exclusive control over it—can modify. People call this kind of software "proprietary" or "closed source" software.

Only the original authors of proprietary software can legally copy, inspect, and alter that software. And in order to use proprietary software, computer users must agree (usually by signing a license displayed the first time they run this software) that they will not do anything with the software that the software's authors have not expressly permitted. Microsoft Office and Adobe Photoshop are examples of proprietary software.

Q6: (a) create a file in Ms Word to insert a paragraph about yourself and save it with file name "yourself". Describe all steps involved in it.

Ans: we have some steps of ms word.

- Firstly we go to the Ms Word.
- Then we type our text in Ms Word.
- After type the text we go to the office button.
- Then click on save option.
- After that we give file name “yourself”.
- Then we select save as type word document.
- Then click on ok.

Q6 (b): write steps regarding followings.

❖ To change the font style.

❖ To change the font size.

❖ To change the font color.

❖ To highlight (in yellow) the line that reads “need to get IMS’s address”

❖ Ans : to change the font style-

❖ Firstly we select the given text.

❖ Then we go to the home tab.

- ❖ After that we go to the font group.
- ❖ Then we go to the font style and we will see different types of font styles.
- ❖ After that we click on any one font style.
- ❖ To change the font size.
- ❖ Firstly we select the given text.
- ❖ Then we go to the home tab.
- ❖ After that we go to the font group.
- ❖ Then we select font size as you want.
- ❖ To change the font color.
- ❖ Firstly we select the given text.
- ❖ Then we go to the home tab.
- ❖ After that we go to the font group.
- ❖ Then we select font color as you want then click on the color.
- ❖ To highlight (in yellow) the line that reads “need to get IMS’s address”

- firstly we select the given text “ need to get IMS’s address”
- then click on home tab
- Then we click on text highlight color on font group.
- After that we choose yellow color.

Q7. Create a file in Ms-Word for the following document and save it with file name ‘Ms-Word’ describe all steps involved in it.

Ms-Word is widely used commercial word processor developed by Microsoft.

Ms-Word is application software which is capable of

- Creating
- Editing
- Saving
- **Printing any type of document**

Ans: steps

1. Type the given text “Ms-Word is widely used commercial word processor developed by Microsoft.” Then press enter key
2. Type “Ms-word is application software which is capable of” then press enter key
3. After that select “bullet” from “bulleted list” from “home tab”.
4. Then type “creating” and press “enter key”. Then type “Editing” and press “enter key”. After that type “saving and press enter key”. Then we type “printing any type of document” and press “enter key”.
5. 2
6. Then we select *word processor* then we go to the home tab after that we go to font group and we click on underline.
7. After that we select the creating text and go to home tab and click on font color and select sky blue color.
8. Then we select saving text and go to the home tab and click on font color and select red color.
9. After that we select “printing any type of document” text and go to the home tab and then go to the font group and click on bold option

Q8: create a file in Ms-Word for the following document and save it with file name ‘ms-word’. Describe all steps involved in it.

Equations

$$X_2 + Y_5 = 30$$

$$Z^3 + Q^4 = 50$$

$$A_{2+B8} = X_2 + Y^8$$

Answer: we have some steps which we follow.

- Firstly we open the Ms-Word and write the equations.
- Next we type X then we go to font group and click on subscript then press 2 after that we press + button from keyboard. Then we type Y then we do subscript and press 5 from the keyboard. Then we press = button from keyboard. Then type 30
- For the second equations we type Z and again do subscript from the font group. Then we type 3. After that we type Q then we click on superscript from the font group. And press 4. After that we press on = button then we type 50

- For the third equations we type A then we click on subscript. And type 2. After that we press + button from keyboard. Then we type B and do superscript from font group. Then we type 8. After that we press = button. Then we type X and again we do subscript. And press 2. Then we press on + button. After that we type Y. then we do superscript. And type 8.
- After that we go to the office button. And click on save. After that we have give the file name ‘equations’ then click on save option.

Q9. Create a file in Ms-word that convert existing highlight text to table as shown below and save it as file name ‘text_to_table’ describe all steps involved it.

Select the text you want to convert

Select the insert tab.

Click on table command. A dialog box appears.

Click on convert text to table, a new dialog box appears

Here set number of columns.

Click on OK finally selected text convert in a table.

Select the text you want to convert.	Select the insert tab.
Click on table command. A dialog box appears.	Click on convert text to table , a new dialog box appears.
Here set number of columns.	Click on ok finally selected text convert in a table.

- Firstly we select the text.
- Then go to insert tab.
- Then we go to the table option.
- After that we selected text to table option.
- Then we select on separate text according to paragraph.
- After that we click on ok.

- Then finally we go to the office button. The click on save option then we write the file name 'text_to_table' and click on ok.

Q10. Create a file in Ms-word to insert a table in the document. Describe all steps involved in it.

Answer: we follow some steps here.

- Firstly we go to the Ms-word.
- Then we go to the insert tab.
- After that we click on table.
- And go to insert table option.
- Then we select the rows number according you wants. And then you select column numbers. And click on ok.
- After that you will saw a table on you display.

Q11. Create a following worksheet in Ms-excel and save it with name 'book'1'

	A	B	C
1	ROLL NO	NAME	MARKS
2	1	Z1	60
3	2	Z2	70
4	3	Z3	50
5	4	Z4	30
6	5	Z5	40
7	6	Z6	50
8	7	Z7	77
9	8	Z8	44
10	9	Z9	88
11	10	Z10	55
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Answer:

Solved in the following. We have followed some steps.

- Firstly we go to Ms-excel. And open a sheet
- Then we type Roll no on a column.
- After that we type Roll no laneways upward to downwards.

- Then we go to b column and we type name. After that we type all the name upward to downward.
- After that we go to c column and type marks. Then we type All marks upward to downward.
- At last we go to office button and go to save option and give the file name 'book'1'and click on ok.

Q12. Calculate the following things of a range (c2:c11) of data in the worksheet created in question no 10.

- The sum of the marks using Auto sum in a range of cells (c2:c11)
- Average of the marks in a range of cells (c2:c11)
- Highest marks in a range of cells (c2:c11)
- Minimum marks in a range of cells (c2:c11)

Answer: we have followed some steps here.

- For sum firstly we go to the insert function. Then we type =SUM (c2:c11) and then press enter.
- For average firstly we go to the insert function. Then we type =AVERAGE (c2:c11) and then press enter.
- For highest mark firstly we go to the insert function. Then we type =MAX (c2:c11) and then press enter.
- For minimum mark firstly we go to the insert function. Then we type =MIN (c2:c11) then we press.

Q13. (a) Describe various steps inv

- To modify column width of a worksheet.
- To modify the row height of a worksheet.
- To delete rows and columns of a worksheet.

Q13. (b) Describe following terms in the worksheet.

- Absolute reference and relative reference in formula

- Cell address

Ans. (a) 1. Set a column to a specific width.

1. Select the column or columns that you want to change.
2. On the **Home** tab, in the **Cells** group, click **Format**.
3. Under **Cell Size**, click **Column Width**.
4. In the **Column width** box, type the value that you want.
5. Click **OK**.

2. To modify the row height of a worksheet.

1. Click the **Format** command on the **Home** tab. The format drop-down menu appears.
2. Select the **rows** you want **to modify**.
3. Select **Row Height**. Increasing the column width.
4. The **Row Height** dialog box appears. Enter a specific measurement. ...
5. Click **OK**.

3. if you don't need any of the existing cells, rows or columns, here's how to delete them:

1. Select the **cells**, **rows**, or **columns** that you want **to delete**.
2. On the **Home** tab, click the arrow under **Delete**, and then click the appropriate **delete** option.

Ans.13 (b) Absolute reference and relative reference in formula

Relative references

By default, all cell references are **relative references**. When copied across multiple cells, they change based on the relative position of rows and columns. For example, if you copy the formula **=A1+B1** from row 1 to row 2, the formula will become **=A2+B2**. Relative references are especially convenient whenever you need to **repeat** the same calculation across multiple rows or columns.

To create and copy a formula using relative references:

In the following example, we want to create a formula that will multiply each item's **price** by the **quantity**. Rather than create a new formula for each row, we can create a single formula in cell **D2** and then copy it to the other rows. We'll use relative references so the formula correctly calculates the total for each item.

- Cell address

The cell ADDRESS function is categorized under Excel Lookup and Reference functions. It will provide a cell reference (its “address”) by taking the row number and column letter. The cell reference will be provided as a string of text. The function can

return an address in a relative or absolute format and can be used to construct a cell reference inside a formula.

As a financial analyst, cell ADDRESS can be used to convert a column number to a letter, or vice versa. We can use the function to address the first cell or last cell in a range.

Formula

=ADDRESS (row _num, column _num, [abs _num], [a1], [sheet text])

The formula uses the following arguments:

1. **Row _num** (required argument) – This is a numeric value specifying the row number to be used in the cell reference.
2. **Column _num** (required argument) – A numeric value specifying the column number to be used in the cell reference.
3. **Abs _num** (optional argument) – This is a numeric value specifying the type of reference to return:

Q14. (a) What tools are available to customize our PowerPoint presentation?

ANSWER(A) 1. VISME

VISME is a cloud-based presentation tool that allows you to create highly visual presentations to engage viewers and

communicate your ideas. It features an intuitive, drag-and-drop design method for creating presentations. The business version also prioritizes brand consistency and company-wide image storage. When you or your employees create a presentation, it will feature colors, logos and images that are on brand for your organization. This promotes consistency across presentations among your employees. VISME also offers a built-in analytics system, so you can see who has viewed your presentation and who finished it.

VISME offers multiple plans ranging from \$20 per user per month to \$60 per three users per month. It's also possible to get a free live demo to see how the technology works before you try it out.

2. Haiku Deck

Haiku Deck is a platform that prioritizes simplicity. Business owners can create elegant, basic presentations with high-quality images. The Spartan approach allows for connecting with audiences instead of losing them in information overload due to text-heavy slides. What separates Haiku Deck from traditional presentation tools is its library of images and array of fonts. It makes it easy to craft simple, powerful presentations that are accessible on any device.

Haiku Deck offers three plans, ranging from \$7.99 to \$29.99 per month.

3. Pitcherific

Pitcherific is not only a presentation solution, but also a platform for building and practicing your presentation. It's a template-based program that guides you through the presentation creation process. Instead of drafting a few slides, Pitcherific prompts you to write out the areas of each part of your speech. The outline for an elevator pitch, for example, includes a hook, problem, solution and closing. There are various templates for different kinds of pitches and presentations, so you'll have guidance on many kinds of speeches and presentations. Pitcherific also recommends a character count for each section and a timeclock, allowing you to track how long your speech or presentation is and stay within a desired range.

Pitcherific's pricing depends largely on your business and its needs, so you'll have to reach out to its sales team to get a direct quote. Pitcherific does offer a free trial in case you're curious to see how the platform works.

4. Canva

Canva is an online platform that provides templates for a wide range of business-related publications, like resumes, newsletters, business cards, media kits, brochures and info graphics. You can also use it to construct presentations. There are hundreds of design layouts and templates to start with, and you can upload your own images or choose from more than 1 million of Canva's stock images. As you build your presentation, you can adjust text and fonts, add filters to images, and drag and drop

different elements for design. You can also upload and save your company logo.

Canva offers a free version equipped with all its features. If you're a startup or very small business owner, this is a good option. For larger businesses, Canva for Work offers team management features for \$12.95 per month (or \$9.95 per month when you pay annually). You can try this version free for 30 days.

5. Slide Camp

Slide Camp provides slide templates for creating company presentations. You can adjust color schemes, add company logos, import charts and data, build info graphics, and organize presentations into sections with Slide Camp. This is a great solution for maintaining presentation consistency across multiple presentations from your organization. After you set up branding details, employees will be able to work with predesigned slides to easily craft professional presentations. It's geared for larger businesses, so if you're a startup or one-person company, this may not be an ideal solution for you.

There are a few plans available, which range from \$49 to \$499 per month depending on the number of users who will access Slide Camp. There is a demo version as well, so you can try out the service to see if it's right for your business.

6. Microsoft Events

While PowerPoint may be a tired way to handle a business presentation at times, Microsoft has other tools that can

introduce a new level of practicality to the standard presentation. It recently introduced the ability to create live and on-demand events in Microsoft 365. These events can be viewed in real time or on demand by remote co-workers or even workers who were present in the meeting but want to reference what was said. It combines HD video with machine learning to create a speaker timeline, speech-to-text transcriptions and time coding, and closed captioning.

Live events are part of the Office 365 subscription plans. If you're already a subscriber, you can use this tool for no additional cost.

7. Powtoon

Powtoon is an animated presentation and video platform for creating short informational videos and presentations about your brand or product. Explainer videos are an important part of a brand's message, and Powtoon is an affordable tool for creating animated videos and presentations to educate consumers and clients about your business. You can easily edit presentations and videos, add voiceover, and build a professional experience for your customers.

Powtoon offers a free version, but there are more robust offerings at \$19 and \$59 per month.

8. Video Scribe

Video Scribe is a whiteboard video presentation platform that allows small businesses to customize their presentations to fit their needs. These videos, which feature a whiteboard and hand

that "draws" different objects and slides in the presentation, are ideal for quick explainers and marketing videos on your business or product. You can easily place objects, insert text, and even draw your own objects or text with Video Scribe's platform.

Video Scribe is available for either \$29 per user per month or, if paid annually, \$12 per user per month. If you want to extend Video Scribe to a larger team, you'll have to pay \$110 to \$130 per user, depending on the number of users. You can also make a one-time payment of \$665 for a single user.

9. Prezi

Prezi is another template-based presentation solution that you can use to create persuasive and engaging presentations with unique movement between "slides" and key points. Prezi maps out your whole presentation on an overall track that you decide. When you switch slides, it doesn't simply advance to the next one; it takes the viewer through the track to the point that needs to be made. This allows your audience to visualize the progression of your presentation. You can arrange content under different sections and create an overview so your audience can see your entire presentation plan. This method keeps the presentation organized and your audience engaged. You can also navigate freely through your presentation – your track is not locked in and you can adjust when you address which points as you're presenting.

Q14 (b) write the steps for the following action for creation of power point presentation

- Open a blank presentation.
- Save the presentation as lab1.pptx.
- Add a title to the first slide the name of your collage.

Type your first name and last name in the subtitle section.

- Add a new slide which has a title and content.

Ans. opens a blank presentation.

- Select the File tab to go to backstage view.
- Select New on the left side of the window, and then click Blank Presentation.
- A new presentation will appear.

SAVE THE PRESENTATION AS LAB 1. PPTX.

1. Locate and select the **Save** command on the **Quick Access Toolbar**.
2. If you're saving the file for the first time, the **Save As** pane will appear in **backstage view**.
3. You'll then need to choose **where to save** the file and give it a **file name**. Click **Browse** to select a location on your computer. Alternatively, you can click **One Drive** to save the file to your One Drive.
4. The **Save As** dialog box will appear. Select the **location** where you want to save the presentation.
5. Enter a **file name** for the presentation, then click **Save**.
6. The presentation will be **saved**. You can click the **Save** command again to save your changes as you modify the presentation.

You can also access the **Save** command by pressing **Ctrl+S** on your keyboard.

Add a title to the first slide the name of your collage.

- Select the **slide** whose layout you will change so that it can have a **title**.
- Click Home > Layout.
- Select **Title Slide** for a standalone **title** page or select **Title** and Content for a **slide** that contains a **title** and a full **slide** text box. ...
- Select the Click to add **title** text box.

Add a new slide which has a title and content.

1. Select the **slide** whose layout you will change so that it can have a **title**.
2. Click Home > Layout.
3. Select **Title Slide** for a standalone **title** page or select **Title** and Content for a **slide** that contains a **title** and a full **slide** text box.
...
4. Select the Click to add **title** text box.

Q15. Write steps for creation of a set of power point slides that demonstrates your skills to use the tools of power point. It should include the following things.

- Title slide & bullet list
- Inserting excel sheet
- Clip art and text

- Slide show effects

Ans. **Title slide & bullet list**

1. Select the **slide** whose layout you will change so that it can have a **title**.
2. Click Home > Layout.
3. Select **Title Slide** for a standalone **title** page or select **Title** and **Content** for a **slide** that contains a **title** and a full **slide** text box. .
4. Select the Click to **add title** text box.

BULLET LIST

1. On the View tab, click Normal.
2. Click in the text box or placeholder where you want to **add bulleted** or **numbered** text.
3. On the Home tab, in the Paragraph group, click **Bullets** or **Numbering** . , and begin typing your **list**. Press Return to **create** a new **list** item.

• **Inserting excel sheet**

- In PowerPoint, on the **Insert** tab, click or tap **Object**.
 - In the **Insert Object** dialog box, select **Create from file**.
 - Click or tap **Browse**, and in the **Browse** box, find the Excel workbook with the data you want to insert and link to.
 - Before you close the **Insert Object** box, select **Link**, and click **OK**.

Clip art and text.

- Display a slide that contains a **Clip Art** icon on one of its placeholders. ...

- Click the **Clip Art** icon to open the **Clip Art** task pane.
- In the Search For box, type a word that describes the artwork you want; then click the Go button. ...
- Click the clip you want. ...
- (Optional) Move or resize the image as desired.

TEXT.

- ♣ Select a text placeholder or box.
- ♣ Type in the text you want.

SLIDE SHOW EFFECTS:

1. Start by opening a "Blank **presentation**" in **PowerPoint**.

...

2. Select the "Title **Slide**" option. ...

3. Type in your title and subtitle. ...

4. Select a background for the entire **presentation**. ...

5. Add new **slides**. ...

6. Set the transitions for your **slides**. ...

7. Add some more pizzazz to your **presentation** with **animation!**

Q16. What is the difference between machine language and high level language?

Ans: High-Level Languages

A high-level language is a programming language that uses English and mathematical symbols, like +, -, % and many others, in its instructions. When using the term 'programming

languages,' most people are actually referring to high-level languages. High-level languages are the languages most often used by programmers to write programs. Examples of high-level languages are C++, FORTRAN, Java and Python.

To get a flavor of what a high-level language actually looks like, consider an ATM machine where someone wants to make a withdrawal of \$100. This amount needs to be compared to the account balance to make sure there are enough funds. The instruction in a high-level computer language would look something like this:

```
x = 100
if balance < x:
    print 'Insufficient balance'
else:
    print 'Please take your money'
```

This is not exactly how real people communicate, but it is much easier to follow than a series of 1s and 0s in binary code.

There are a number of advantages to high-level languages. The first advantage is that high-level languages are much closer to the logic of a human language. A high-level language uses a set of rules that dictate how words and symbols can be put together to form a program. Learning a high-level language is not unlike learning another human language - you need to learn vocabulary and grammar so you can make sentences. To learn a programming language, you need to learn commands, syntax and logic, which correspond closely to vocabulary and grammar.

The second advantage is that the code of most high-level languages is portable and the same code can run on different

hardware. Both machine code and assembly languages are hardware specific and not portable. This means that the machine code used to run a program on one specific computer needs to be modified to run on another computer. Portable code in a high-level language can run on multiple computer systems without modification. However, modifications to code in high-level languages may be necessary because of the operating system. For example, programs written for Windows typically don't run on a Mac.

A high-level language cannot be understood directly by a computer, and it needs to be translated into machine code. There are two ways to do this, and they are related to how the program is executed: a high-level language can be compiled or interpreted.

MACHINE LANGUAGE:

Computer can understand only the language of Digital Electronics. Digital Electronics deals with presence and absence of voltages. Within the computer there are two logics can play their role? These logics are –

- **Positive Logic** – Here presence of voltage will be denoted by 1 and absence of voltage will be denoted by 0
- **Negative Logic** – Here presence of voltage will be denoted by 0 and absence of voltage will be denoted by 1

But obviously computer can follow anyone of the logics at a time, not both the logics simultaneously. To make the computer understand, a program can be written using only 0s and 1s. The data can also be specified and represented using only 0s and 1s. Such a program is called Machine Language program. Machine language was the first in the evolution of computer

programming languages. Computer directly understands a program written in the machine language. So as a result, machine language program does not require any translator to convert from one form to another. In fact, even to this day, basically computers understand only the 0s and 1s.

Disadvantages of machine language program – Writing a program in machine language has the following drawbacks.

- It is very tiresome to work with and highly error prone. While writing the program, a 1 and 0 can get interchanged due to typographical error. But then it is very difficult to locate it for correction. So a machine language program is very difficult to debug.
- Just having a look at the program, it is very difficult to visualize the function of the program. In fact, it is very difficult to make out whether a particular bit sequence is an instruction in the program, or a data value, or the output result. As instructions, data, output and operands, all are represented using 0s and 1s in machine language.
- Machine language programs are platform and architecture-dependent. The same program does not work on another computer by a different manufacturer. This is because machine language is different for different computers. Say the bite pattern 11110000 means addition in one architecture but might be representing subtraction in architecture as well.
- To develop a program in machine language, the programmer must be highly conversant with the organization and architecture of the computer system being used.

Advantages of machine language program –The only advantages of writing in machine language are

- The Machine language program is executed faster than a program written in a high-level language (high-level language is discussed a little later). The efficiency of the program solely depends on the complexity of the program itself.
- A translator like compiler or interpreter is not needed and so results in a cheaper computer system.

Q17. Discuss about different data types C programming language.

Ans. Each variable in C has an associated data type. Each data type requires different amounts of memory and has some specific operations which can be performed over it. Let us briefly describe them one by one:

Following are the examples of some very common data types used in C:

- **char:** The most basic data type in C. It stores a single character and requires a single byte of memory in almost all compilers.
- **Int:** As the name suggests, an int variable is used to store an integer.
- **Float:** It is used to store decimal numbers (numbers with floating point value) with single precision.
- **Double:** It is used to store decimal numbers (numbers with floating point value) with double precision.

Different data types also have different ranges up to which they can store numbers. These ranges may vary from compiler to

compiler. Below is list of ranges along with the memory requirement and format specifies on 32 bit gcc compiler.

DATA TYPE	MEMORY		FORMAT
	(BYTES)	RANGE	SPECIFIER
short int	2	-32,768 to 32,767	%hd
unsigned short int	2	0 to 65,535	%hu
unsigned int	4	0 to 4,294,967,295	%u
int	4	-2,147,483,648 to 2,147,483,647	%d
long int	8	-2,147,483,648 to 2,147,483,647	%ld
unsigned long int	8	0 to 4,294,967,295	%lu

	MEMORY		FORMAT
DATA TYPE	(BYTES)	RANGE	SPECIFIER
long long			
int	8	$-(2^{63})$ to $(2^{63})-1$	%lld
unsigned long long		0 to	
int	8	18,446,744,073,709,551,615	%llu
signed char	1	-128 to 127	%c
unsigned char	1	0 to 255	%c
float	4		%f
double	8		%lf
long double	16		%Lf

We can use the sizeof() operator to check the size of a variable. See the following C program for the usage of the various data types:

Q18. Find the output of the following expressions.

a) $X = 20/5*2+30-5$

b) $Y = 30-(40/10+6)+10$

c) $Z = 40*2/10-2+10$

Ans. a) $X = 20/5*2+30-5 = 33$

b) $Y = 30-(40/10+6) +10 = 30$

c) $Z = 40*2/10-2+10 = 16$

Q19. Describe the syntax of the following statements.

- a)
- loop (c) while loop
- d) do- while loop

If – else statement (b). for

Ans. A)

IF ... else statement

IF ... else statement: if statement can be followed by an optional else block of statements, which executes when the Boolean expression is false. syntax

if (expression)

{

true Block of statements;

} else

{

else Block of statements;

}

b) For loop: The syntax of the for loop is:

```
for (initialization Statement; test Expression; update Statement)
{
    // statements inside the body of loop
```

```
}
```

C) While loop: The syntax of the `while` loop is:

```
While (testExpression)
{
    // statements inside the body of the loop
}
```

D) Do loop : // Program to add numbers until the user enters

zero

```
#include <stdio.h>
int main()
{
    double number, sum = 0;

    // the body of the loop is executed at least once
    do
    {
        Printf("Enter a number: ");
        scanf("%lf", &number);
        sum += number;
    }
    while (number != 0.0);

    printf("Sum = %.2lf",sum);

    Return 0;
}
```


Q20. Find the output of the followings program segments.

Ans. a)

```
#include <stdio>
Int main ()
{
    Int I;
    For (i=1; I<2; i++)
    {
        Printf ( " IMS Ghaziabad\n")
    }
}
```

Output- IMS Ghaziabad

b)

```
#include <stdio.h>

Int main ()
{
    Int I =1;
    While ( i <=2 )
    {
        Printf ( " IMS Ghaziabad\n");
        I = i+1
    }
}
```

```
}
```

Output- IMS Ghaziabad IMS Ghaziabad IMS Ghaziabad

C)

```
#include <stdio. h>
```

```
Void main ()
```

```
{
```

```
Int a = 10, b=100
```

```
If (a>b)
```

```
Printf ( “ largest number is %d\n” , a);
```

```
else
```

```
Printf (“ largest number is %d\n”, b);
```

```
}
```

Output- largest number is 100